

Research Summary

Effectiveness of Speed Management Methods in Work Zones

Management of speeds in work zones, with the goal of reducing speeds to improve compliance with the posted work zone speed limit, is a significant component of any strategy to reduce work zone crashes. The objective of this study is to investigate the effectiveness of speed management countermeasures currently used by state DOTs. The research methodology to meet this objective includes a review of the existing literature, field study, simulator study, and driver survey.

Results from the literature review indicate that there is limited general guidance available regarding the management of speeds in work zones, including decision tools and suggestions for placement of law enforcement in work zones. Prior research studies have generally found that various countermeasures are effective in reducing vehicle speeds in work zones and that several factors, such as driver age and education, perception of the reasonableness of the posted work zone speed limit, presence of work activity, traffic signs, and time pressures, influence driver speed selection in work zones.

The field evaluation found that active law enforcement was the most effective speed countermeasure in reducing vehicle speeds during both daytime and nighttime conditions. The use of the other speed countermeasures also resulted in reductions in vehicle speeds in the work zone. The speed trailer without flashing

speed feedback or flashing red and blue lights was associated with lower speed reductions than the other speed countermeasures. In general, the speed countermeasures performed better with respect to speed reductions during nighttime.

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Results from the simulator study indicate that the use of the combination of speed trailer and active law enforcement was the most effective in reducing vehicle speeds during daytime. During nighttime, the speed trailer was associated with the lowest speeds, and the speed reductions for both active and passive law enforcement were comparable. Generally, the effect of the speed reduction dissipated more quickly during nighttime than daytime.

The post-simulator survey found study participants generally thought law enforcement was the most effective strategy for reducing vehicle speeds. However, participants preferred the speed trailers over law enforcement, and some participants suggested that the presence of law enforcement could be distracting.



Participants indicated that visibility and the presence of active work or law enforcement were the factors with the greatest influence on their speed selection in work zones.

A general driver survey was developed and administered by the research team. Findings from the driver survey indicate that the 108 respondents generally preferred the speed display trailers over the presence of law enforcement for both daytime and nighttime. However, respondents also indicated that the presence of law enforcement would most likely cause them to reduce their speed. Survey responses indicate that the presence of active work is the factor that has the greatest effect on drivers' speed selection in work zones.

Overall, the results of the study indicate that an approach that considers multiple strategies to manage vehicle speeds in work zones may be most effective. The countermeasures evaluated in this study were all associated with speed reductions in the work zone. While law enforcement was generally the most effective strategy in reducing vehicle speeds, it might not be feasible at all sites. The selection of speed countermeasures to implement at a specific work zone could be made on a project-by-project basis based on various factors such as traffic volumes, type of work activity, site conditions, availability of law enforcement or equipment, and cost.

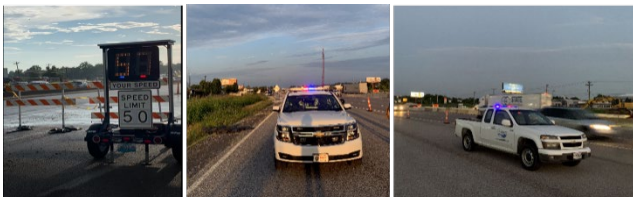


Figure 1: Work zone speed countermeasures (a) speed trailer with red and blue lights (b) passive law enforcement (c) work vehicle with red and blue lights.

Project Information

PROJECT NAME: TR202115—
Effectiveness of Speed Management
Methods in Work Zones

PROJECT START/END DATE: March
2021-October 2022

PROJECT COST: \$200,000

LEAD CONTRACTOR: MCTI

PRINCIPAL INVESTIGATOR: Henry Brown
and Carlos Sun

REPORT NAME: Effectiveness of Speed
Management Methods in Work Zones

REPORT NUMBER: cmr 22-010

REPORT DATE: October 2022

Project Manager



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